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# A New Species and New Section of the Genus *Freycinetia* (Pandanaceae) from New Caledonia[1]

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ABSTRACT: *Freycinetia hydra* sp. nov. is described from several collections made in New Caledonia in recent years; it represents a new species. Because of its mainly lateral inflorescences and polystigmatic berries with slightly separated carpel tips, it is unique and represents a new Section of the genus *Freycinetia*. Morphology, anatomy (of the leaf), and distribution of the new species are discussed.

THROUGH THE COURTESY of the botanists in the ORSTOM station in Anse Vata, Noumea, New Caledonia, numerous specimens of Pandanaceae have been sent to the writer for identification. Among these have been several that stood out from all species known in New Caledonia by the combination of two features unusual in the genus and the possession of a third not found in any other known to date: lateral inflorescences (i.e., inflorescences terminal on short lateral branches either prophyllate and leafless or with a few strongly reduced leaves), fairly high stigmatic number per berry, and (uniquely) the separation of each stigma on a short free stylelike portion of the berry apex. These three features occurring together clearly distinguish the species, newly proposed here, and in addition, appear to require further taxonomic status. To satisfy this requirement, a new Section of *Freycinetia* is established here for this unusual and noteworthy species.

## *Freycinetia* Gaudich. 1824

Sect. ***Hydra*** B. C. Stone sect. nov.

Bacca compressa polystigmatica (stigmata plerumque 6–12); stigma singulum breviter liberum subplanum circulare-reniformium in apice podii styliformi positum. Inflorescentia lateralis in ramis brevis vel brevissimis prophyllatis vel persparse foliatis.

TYPE SPECIES: *Freycinetia hydra* B. C. Stone.

DISTRIBUTION: New Caledonia, endemic.

***Freycinetia hydra*** B. C. Stone sp. nov.

Figure 1

Liana ramis usque ad 25 mm diametro, foliis sublinearibus in parte media quam base apicemque paullo latioribus, apice acuto, lamina 50–65 cm longis 2–3.2 cm latis, subintegris, marginibus basem apicemque versus perminute subobsolete denticulatis, denticulis vix 0.4 mm longis, deltoideis obtusis (in basi) vel antrorse acutis (in apice) c 1 cm sese separatis; costa media basin excepta remotiuscule perminute denticulato, denticulis c 1 cm sese separatis vel obsoletis; nervis longitudinalibus subobscuris plerumque 5–6 mm sese separatis; auriculis angustis attenuatis c (4–) 5–7 (–8) cm longis. Inflorescentia foeminea lateralis ternatis tricephaliferis, pedunculis laevibus hemiteretibus bisangulatis 25 mm longis, 3–5 mm crassis; cephaliis oblongis ambitu rotundatis c 5–6.5 cm longis, 2.4–3 cm latis, subteretis, in statu frutescenti. Bacca lageniformis usque ad 14–15 (rariter ad 18) mm longa, 3–5 (–8) mm lata, apice coriaceo in (4–) 6–12 (–17) styluli tereti 0.5–0.75 mm longi diviso, basi carnoso-

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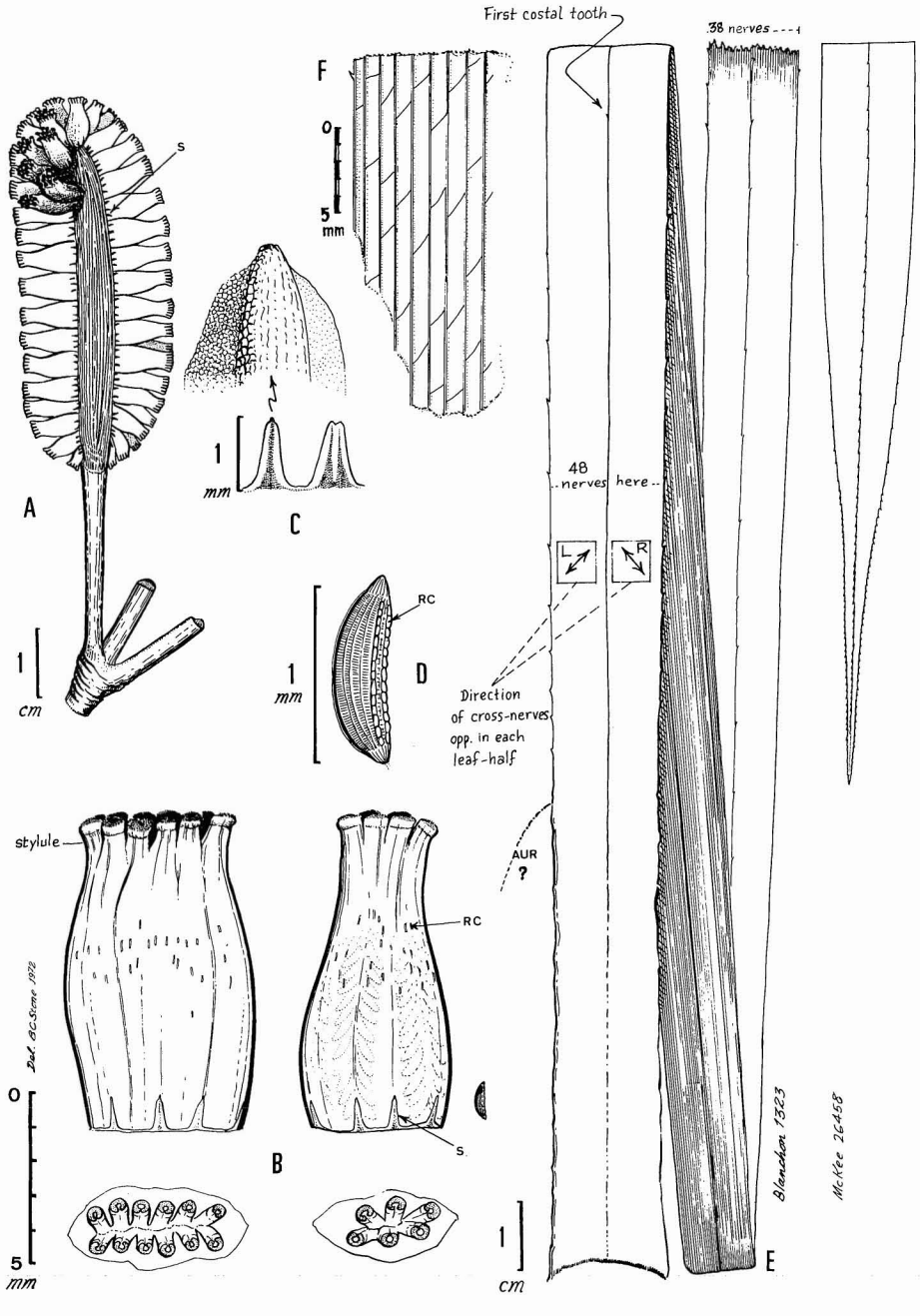


**Freycinetia hydra**

FIGURE 1. *Freycinetia hydra* B. C. Stone sp. nov. *A*, portion of an infructescence, with one cephalium in longitudinal section (s = staminodium); *B*, berries submature in profile and top view (RC = raphidophorous cell); *C*, staminodia, enlarged view and microscopic detail; *D*, seed, lateral view; *E*, leaf (the apex shown is from the holotype, *McKee 26458*); *F*, detail of part of leaf lamina showing part of margin, with a prickle, longitudinal veins, and cross-veins. Drawn from the holotype, *McKee 26458*, and from *Blanchon 1323*.

TABLE 1

COMPARATIVE LEAF ANATOMICAL CHARACTERS IN *F. hydra* AND *F. longispica*

| | STOMATA | EPIDERMAL CELLS' PAPILLAE | ZONATION | CRYSTALS (RHOMBOIDAL) | NEIGHBORING CELLS |
|---|---|---|---|---|---|
| *F. hydra* | Class I | 0 | + | 0 | 9–11 |
| *F. longispica* | Classes I and IIC | 0 | + | 0 | 8–10 |

NOTE: + = present; 0 = absent.

pulposo plurimis seminibus continente; stigma brunneo subcirculare-reniforme 0.25–0.45 mm lato. Semen 1–1.5 mm longum 0.5–0.8 mm latum paullo semi-lunare vel ellipsoideo-subfusiforme, raphe alba magna 0.3–0.45 mm lato raphidophori instructum. Flores masculos ignota.

TYPES: *McKee 26458* (Holotype P! isotypes NOU, KLU!), cited below.

SPECIMENS EXAMINED: New Caledonia: Col d'Arama, west side, 60 m altitude, gallery forest over schist, fruits red fragrant, 23 March 1973, *H. S. McKee 26458* (Holotype P, isotypes NOU, KLU). Route Arama, creek near cote 58 after fork, 19 January 1965, *J. P. Blanchon 1323* (NOU!). River Toma, altitude 500 m, gallery forest, semiepiphyte, 11 November 1972, *J. M. Veillon 2791* (NOU, KLU!). South slope Mt. Koui, Port-Laguerre Bay, altitude 100 m, 9 January 1947, *R. Virot 1658* (P!).

Leaf anatomy: Zonation (costal/intercostal) very distinct. Epidermal cells rectangular to polygonal in both costal and intercostal zones. Stomata of Class I, not sunken, simple; neighboring cells 9 to 11. Stomata very small, with high density on abaxial face of lamina. Rhomboidal crystals absent. Hypodermis fairly deep, five cell layers thick; three or four epidermal cell files correspond to one hypodermal file. Nonvascular fibers distributed in the more superficial hypodermal layers. Raphides present in the palisade tissue.

## DISCUSSION

In its general appearance this species resembles *Freycinetia arborea* (*F. longispica*), which is a common plant in New Caledonia. This resemblance extends to the general leaf size and shape, nature of the infructescence (ternate), and approximate size and shape of the cephalia (syncarps). On closer comparison, however, various differences are noticeable, including the proportionally somewhat shorter cephalia of *F. hydra*, the characteristic stylules of the berries of *F. hydra*, and, of course, the lateral inflorescences. Anatomically, these two species differ somewhat, as shown in Table 1.

In addition, the stomata of these two species are slightly different in size, those of *F. hydra* being, in our specimens, about 273 $nm^2$ and in *F. longispica* about 295 $nm^2$.

It will be noted that in using the name *F. longispica* Martelli, which has been traditionally applied to the New Caledonian representative of Sect. *Freycinetia*, convenience is temporarily served; but in another paper it will be shown that *F. longispica* is a local form only of the widespread *F. arborea* Gaudich.